

Remarks

Claims 1, 2, 4-9, 11-13, 15-19, and 21 were pending in the application when last examined. Claims 1 and 12 are amended. Claim 25 is newly added.

Applicant thanks the Examiner for taking the time to conduct a telephonic interview on April 20, 2009. The remarks presented below address some of the issues discussed during the interview.

Claim Rejections – 35 USC §103

Claims 1, 2, 4-6, 8, 9, 11-13, 15-17, 19 and 21 are rejected under 35 USC 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0015028 to Park (“Park”) in view of U.S. Patent Application Publication No. 2006/0033695 to Kudo et al. (“Kudo”) and U.S. Patent No. 7,098,901 to Nakano (“Nakano”).

Independent Claim 1 is patentable over Park and Kudo because it recites “a signal controller for ... storing digital gamma signals for different pixel colors” In the invention, a predetermined number of digital gamma data signals for respective pixel colors R, G, B are stored in a register of a signal controller and the stored digital gamma signals are supplied to a gray voltage generator (see, e.g., Application’s FIG. 4 and page 6, lines 11-14). In contrast, Park fails to disclose a signal controller that stores digital gamma signals for different pixel colors. Park’s digital gamma signals are generated in a Gamma Data Generating Unit 42 and output (see Park, “FIG. 2 and paragraph [0044]). The Examiner took the position that Park’s Gamma Data Generating Unit 42 must store the digital gamma signals even if not explicitly so stated. Applicant traverses this rejection on the grounds that it is not necessary for Park’s Gamma Data Generating Unit 42 to store the digital gamma signals, and Park neither discloses or suggests storing the data in the signal controller 20. In fact, Park teaches away from storing the digital gamma data in the signal controller by teaching to output the signals after generation (Park, paragraph [0044]). Even in the embodiment with the mixer unit 44 (see Park’s FIG. 4), there is no mention of storing the digital gamma data in the signal controller 20. In fact, the mixer unit 44 is arranged to mix R, G, B data and gamma data and output the mixture (Park, paragraph [0045]).

The key to supporting any rejection under 35 USC 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. MPEP 2141-III. Rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” KSR v. Teleflex, 550 U.S. at __, USPQ2d at 1396. Applicant respectfully submits that this standard for a valid rejection under 35 USC 103 has not been met because the Examiner does not explain why Park, contrary to its clear teaching on its face to use a signal controller that generates and outputs a digital gamma signal, would be construed as disclosing storing the generated data in the signal controller. The Examiner assumes that the data must be stored and provides no rational for the assumption.

Independent Claim 12 is patentable over Park and Kudo because it recites that “the signal controller has a register for storing a predetermined number of digital gamma data” The explanation provided above for Claim 1 applies here. The Office Action cites to Park’s paragraph [0034] as teaching this limitation (see Office Action, page 9) but that is a mischaracterization because the cited paragraph actually teaches that the signal controller “generates and outputs digitized gamma data” with not even a suggestion to store the data.

Independent Claims 1 and 12 are patentable over Park and Kudo for the additional reason that they recite “a plurality of data drivers ... wherein each of the data drivers individually receives the analog gamma reference voltages and selects a gray voltage based on the analog gamma reference voltages and selects a gray voltage based on one of the analog gamma reference voltages that is associated with the same pixel color as the image data.” In the Office Action of December 12, 2008, the Examiner stated the following:

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the signal controller of Park to generate different digital gamma signals for different pixel colors by applying the concept of Kudo, i.e. generating different digital gamma signals for different pixel colors, to the apparatus of Park, and to modify the gray voltage generators of Park to produce analog gamma reference voltages that are specific to different pixel colors and are associated with the same pixel color as the image data ...in order to allow the data drivers of Park to output data voltages representing more accurate gamma curves to the liquid crystal panel (Office Action dated December 12, 2008, page 4.)

However, viewing the combination of Park, Kudo, and Nakano, there is no teaching to modify the data drivers so that the selection of a gray voltage based on the analog gamma

reference voltage that is associated with a particular pixel color is done by the data drivers. In fact, Kudo teaches away from having the data drivers make such selection because it teaches to adjust the gray scale voltages using a resistance ladder even before the signal reaches the data drivers (Kudo, FIGs. 13-16 and paragraph [0111]). Using Kudo's control register 301 that includes color-specific gamma characteristic registers and a resistance ladder for adjusting gray scale voltages, it would not be necessary for a person of ordinary skill in the art to use the configuration of the invention where gray voltage selection is made by the data drivers.

The invention allows the use of separate gamma reference voltages to be done without increasing the number of pins on the data driver or requiring additional blocks for generating color-specific gamma reference voltages (Application, page 2, lines 12-17). In other words, one of the advantages of the invention is that color-specific gamma reference voltages can be achieved more efficiently than by previously-known methods/apparatuses. This advantage is a result of the configuration that is recited in the claims. While the Office Action states that "Kudo teaches a concept of generating and processing different independent digital gamma signals for different pixel colors" (e.g., Office Action dated December 12, 2008, page 4), this broad concept is not what is being claimed.

Claims 2, 4-6, 8, 9, 11-13, 15-17, 19, and 21 depend from Claims 1 and 12 are patentable over Park, Kudo, and Nakano for the reasons stated above.

Claims 7 and 18 are rejected under 35 USC 103(a) as being unpatentable over Park and Kudo, Nakano, and further in view of U.S. Patent No. 5,091,722 to Kitajima et al. ("Kitajima").

These rejections assume that Park, Kudo, and Nakano teach all the elements of Claims 1 and 12 from which Claims 7 and 18 depend. However, as explained above, Park, Kudo, and Nakano in fact do not teach all the elements of Claims 1 and 12. Moreover, Kitajima fails to cure the deficiency in Park, Kudo, and Nakano. Thus, Claims 7 and 18 are patentable over Park, Kudo, Nakano, and Kitajima.

New Claim 25 depends from Claim 1, and is thus patentable over Park, Kudo, and Nakano for the same reason as Claim 1.

Conclusion

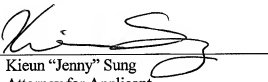
Based on the foregoing, Claims 1, 2, 4-9, 11-13, 15-19, 21, and 25 are now in condition for allowance. The Director is authorized to charge any deficiency in fees, or credit any overpayment, to Deposit Account No. 08-1394. Please telephone the undersigned attorney at (408) 392-9250 if there are any questions.

Respectfully submitted,

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By


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